SUPERFUND FIVE YEAR REVIEW
(Operable Units No.1 and No.2)

Old Springfield Landfill Superfund Site
Springfield, Vermont

September 1998

I. INTRODUCTION

1.1 Statutory Requirements

Authority Statement. EPA Region I conducted this review pursuant to CERCLA section 121(c), NCP section 300.430(f)(4)(ii), and OSWER Directives 9355.7-02 (May, 1991), and 9355.7-02A (June, 1994). It is a statutory review. The purpose of the five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become part of the Site file.

The EPA has established a three-tiered approach to conducting five year reviews, the most basic of which provides a minimum protectiveness evaluation (Level I Review). The second and third levels of review (Levels II and II) are intended to provide flexibility to respond to varying site-specific considerations and employ further analysis of Site conditions. In all but a relatively few cases where site-specific circumstances suggest a more comprehensive level of review, the EPA has determined that a Level I review will be appropriate. A Level I review is appropriate for the Old Springfield Landfill to confirm that the remedial actions, as presented in the 1988 and 1990 Record of Decisions (RODs), adequately protect human health and the environment.

1.2 Scope of the Five Year Review

Specific tasks performed as part of the five year review include:

- Document Review:
  Applicable Site-related documents were reviewed to provide supporting information as part of the 5 year review. The following documents or files were examined:

  Environmental Protection Agency, "Record of Decision - Old Springfield Landfill", September 22, 1988 (Operable Unit 1)

  Environmental Protection Agency, "Procedures for Completion and Deletion of National Priorities List Sites -OSIER Directive 9320.3A", April 1989

  Partial Consent Decree, Civil Action No. 89-357, between EPA, the State of Vermont, Emhart, Textron, BFI, and the Town of Springfield, September 29, 1989

  Environmental Protection Agency, "Record of Decision - Old Springfield Landfill", September 29, 1990 (Operable Unit 2)

  Partial Consent Decree, between EPA, the State of Vermont, Emhart, Textron, BFI, and the Town of Springfield, May 31, 1991

  Environmental Protection Agency, "Update No. 2 to the Procedures for Completion and Deletion of National Priorities List Sites -OSIER Directive 9320.3c", February 19, 1992

REMCOR Inc., "Remedial Action Report, Operable Unit 1, Old Springfield Landfill Site", September 29, 1993

REMCOR Inc., "Final Operations and Maintenance Manual, Western Leachate Seeps Collection and Conveyance System, Old Springfield Landfill", October 18, 1993

REMCOR Inc., "Final Submittal, Operations and Maintenance Manual, Site Collection and Pumping and Pretreatment Facility, Old Springfield Landfill", October 25, 1993

REMCOR Inc., "Remedial Action Report for Operable Unit No. 2, Old Springfield Landfill", July 1994.

US EPA, "Structure and Components of Five-Year Reviews", OSIER 9355.7-02, July 1991

US EPA, "Supplemental Five-Year Review Guidance", OSIER 9355.7-02A, July 1994

- Standards/ARARs Review:

  Federal criteria, advisories, and guidance and State standards for soils, groundwater and surface water, and air were considered in the development of the RODs for the Site. For this 5 year review, the most recently promulgated soil, groundwater and surface water, and air standards were reviewed with respect to the Site-related contaminants of concern, and compared to the standards in effect at the time of the RODs. The purpose of this review was to ensure that the selected remedy remains protective of human health and the environment by considering the changes that have occurred since the signed of the RODs.

- Site visits:

  EPA has performed annual inspections of the Site since 1994 to evaluate the performance of the remedies. The most recent inspection was in July 1998.

1.3 Site Description:

The 10 acre Old Springfield Landfill (hereafter referred to as "the site") is located approximately one mile southeast of the city center in the Town of Springfield, Windsor County, Vermont (see Figure 1). The site is situated on an upland plateau with slopes that descend steeply to the north, east, and west. Seavers Brook runs west of the site and the Black River runs east of the site. Seavers Brook flows northward until it reaches the Black River, which flows to the south and empties into the Connecticut River. Will Dean Road is located along the western side of the site. Will Dean Road intersects Route 11 just north of the site. Route 11 runs past the eastern side of the site.

The 1980 National Census lists the population of the Town of Springfield at 10,180. The Villages

of Goulds Mill and Hardscrabble Corner are located within a one-mile radius of the site. The land use within a one-mile radius of the site is primarily low density residential housing, light agriculture, undeveloped forest land and commercial. Approximately 200 homes and condominiums are located within a one-mile radius of the site, housing an estimated population of between 650 and 750 people.

Natural resources in the vicinity of the site include groundwater, surface water, fish and game, arable land, forest, woodland and minerals.

A bedrock aquifer is a current source for drinking water in the area of the site. Users of the bedrock aquifer groundwater in the site vicinity are located primarily upgradient of the site. All other residents in close proximity to the site receive municipal water from the Town of Springfield. Groundwater monitoring wells are located between the Site and current users of the bedrock aquifer.

1.4 Background:

The Old Springfield Landfill, also referred to as the Will Dean Dump, was operated by the Town of Springfield between 1947 and 1968. Hazardous industrial waste from local industries was co-disposed with municipal trash. The industrial waste was disposed both in discrete trenches and mixed with municipal solid waste. Most hazardous material was disposed in bulk liquid and semi-liquid form. Shortly after the site was closed in 1968, it was sold and developed for use as a mobile home park, known as the Springfield Mobile Home Estates which was owned by John Curtin. At the time of the mobile home park's development, the Vermont Department of Health (DOH) recommended that drilled wells not be used to supply water to the mobile homes because the development was located over areas that had been used for chemical disposal. Municipal water lines were extended to serve the mobile homes. Springfield Mobile Home Estates is no longer occupied and the mobile homes have been removed. Only a caretaker for the estate of John Curtin, the owner of the property, still resides on the site. A six-building condominium complex and 13 single family residences are located in the immediate vicinity of the site. Due to the control of the seeps and the existence of the cap, there is no current risk to the caretaker or local residents from the hazardous substances disposed at the Site.

Shortly after the opening of Springfield Mobile Home Estates, a nearby resident's complaint about foul-smelling water prompted an investigation of the site by the Vermont DOH and the Vermont Agency of Environmental Conservation (VTAEC). In response to finding volatile organic compound contamination in a spring located near Seavers Brook and in the residential well near the mobile home park, the spring was abandoned and the affected home near the mobile home park was connected to the public water supply.

On December 20 1982, after the VTDEC requested that the site be reviewed for inclusion in the Superfund Program, the site was added to the National Priorities List (47 Fed. Reg. 58476) of hazardous waste sites eligible to receive federal funding for study and cleanup.

In 1984, EPA had discussions with Emhart Industries, Inc. (Emhart), Textron Inc., and the Town of Springfield regarding performance of a remedial investigation/feasibility study (RI/FS) and installation of a water line. Agreement was reached on the water line only. EPA initiated the RI/FS with fund money.

The results of EPA's initial Remedial Investigation (RI), released in September 1985, showed contamination in site soils, surface water seeps and groundwater. Major contaminants of concern include trichloroethene, methylene chloride, vinyl chloride, benzene, tetrachloroethene, 1,2-dichloroethene, PCBs, and carcinogenic PAHs. Volatile organic compounds (trichloroethene, 1,2-dichloroethene, vinyl chloride, tetrachloroethene, benzene, and methylene chloride) were the major contaminants in the groundwater and seeps. PCBs and PAHs were the major contaminants in surface and subsurface soils. EPA determined that a supplemental RI was necessary to delineate the former waste areas, and to better define the nature, extent, and potential adverse human health effects of site contamination.

Supplemental RI activities included taking samples from soil, leachate seeps, residential wells, groundwater and sediment at the site, as well as instituting a soil boring program in the mobile home area. The soil boring program took place between July 6 and July 18, 1987. Because of the potential for mobile home park residents to be exposed to contamination during the soil boring program, EPA temporarily relocated mobile home park residents during that period. EPA completed Phase I field investigations in October 1987, and Phase II field investigations in May 1988, and released the final Supplemental RI report in June 1988. EPA released the Feasibility Study which identified and evaluated cleanup alternatives for the site in June 1988.

In June 1988, EPA issued a Proposed Plan for remedial activities at the site. As a result of comments submitted during the public comment period on the Proposed Plan, EPA decided to separate the remedial action into two operable units. On September 22, 1988, EPA signed a Record of Decision (ROD) for Operable Unit No. 1, which involved the management of migration of contaminated seeps and groundwater from the site. The 1988 ROD also required that additional studies be done in order to determine the source control remedy for the site. These studies were needed to provide a better understanding of the relationship between groundwater and the waste areas.

In 1989, EPA entered into an Administrative Order by Consent (AO), with two potentially responsible parties (PRPs) at the site. Under the AO, the PRPs agreed to perform the additional studies called for in the 1988 ROD for Operable Unit No. 1 and to prepare a Focused Feasibility Study (FFS) Report based upon the results of those studies. The 1988 ROD and 1989 AO defined the scope of the FFS. In 1990, EPA also entered into a consent decree with the PRPs for the performance of the Operable Unit No. 1 remedial action.

On September 28, 1990, EPA signed a Record of Decision selecting a multi-layer landfill cap and up-gradient groundwater diversion as the remedial action for the second Operable Unit. In 1991, EPA reached agreement with the PRPs for the performance of the Operable Unit 2 remedial action.

II REMEDIAL OBJECTIVES

The Site has two Operable Units.

The Remedial Action Objectives for the first Operable Unit were:

> Prevent direct contact (incidental ingestion and dermal absorption) with contaminated surface soils throughout the site by residents and by construction workers;
>
> Prevent the volatilization of contaminants from contaminated soils, wastes, and leachate seeps;
>
> Prevent the contamination of fish in the Black River by preventing leaching of contaminants from the site soils to shallow groundwater to the bedrock aquifer with subsequent discharge to Seavers Brook and into the Black River; and
>
> Prevent the leaching of contaminants from site soils to shallow groundwater with subsequent transportation from the shallow groundwater to the potable bedrock aquifer.

To meet these remedial action objectives , the first Operable Unit ROD required the design and construction of:

> (1) two groundwater extraction wells;
> (2) a collection system for three areas of contaminated seepage, two on the east side of the Site at the base of Waste Areas 2 and 3, and one on the west side along Seavers Brook Road; and
> (3) a pre-treatment facility for discharge of collected water to a POTW.

The first Operable Unit ROD also included the implementation of Town of Springfield Municipal Ordinance 88-2 as an institutional control to prevent future use of the groundwater.

Operable Unit No. 1 did not deal with the closure of the landfill.

To complete the remediation of the Site, EPA implemented a second Operable Unit. The Remedial Action Objectives for the second Operable Units were:

Prevent the leaching of soil contaminants to the groundwater;

Prevent the migration of contaminated groundwater to the rest of the aquifer;

Prevent contact with contaminated soil or leachate that present a risk;

Prevent further migration of contaminated groundwater offsite; and

Prevent the uncontrolled emission of landfill gases containing hazardous substances.

To meet these remedial action objectives, the second Operable Unit required the design and construction of:

(1) a third groundwater extraction well;
(2) upgradient french drains and surface water diversions; and
(3) a multi-layer landfill cap with gas vents.

The second Operable Unit ROD required the application of Municipal Ordinance 88-2 to the area to be capped.

Both RODs required long-term operation, maintenance, and monitoring of the remedial actions.

Implementation of Remedial Action:

The remedial design process for Operable Unit No. 1 was completed in April 1992. The final design required the construction of a pre-treatment facility with two air strippers, metals pre-treatment, and carbon treatment of the air emissions. The PRP contractor, REMCOR, mobilized to the Site on June 1, 1992. Construction activities for the ground water extraction wells, west side seepage collection system, and pre-treatment facility were completed by February 8, 1993. The east side leachate collection system was delayed until placement of the cap. The start-up testing and performance testing of the collection systems and pre-treatment facility were completed by February 28, 1993. The pre-treatment system successfully passed the hydraulic and analytical performance tests. The east side collection system and additional extraction well were completed June 18, 1993 and performance testing for the source control well and eastern seep collection system was completed on August 8, 1993.

The construction completion of Operable Unit No. 1 collection systems and pre-treatment facility were documented in the Remedial Action Report for Operable Unit No. 1, September 1993. This Report was approved by EPA on September 30, 1993. EPA and the oversight contractor performed a final inspection on September 16, 1993.

Sample results and water level measurements demonstrate that Operable Unit No. 1 is meeting the ROD remedial objectives of controlling groundwater flow and meeting the pre-treatment requirements of the POTW. The goal of containment of the groundwater has been met. Contaminated groundwater no longer flows from the Site to Seavers Brook. The long-term goal of groundwater restoration will not be achieved for many years. The first operable unit remedial action has also achieved control over the landfill seeps. The volatilization of contaminants has been controlled by the leachate collection system. The seeps are now collected and pumped to the pre-treatment facility and then discharged to the POTW.

The final design of Operable Unit No. 2 (OU2) was complete May 1993. As part of the pre-design activities, a pre-load of common borrow soil was placed on Waste Area 4 in the fall of 1992 to reduce long-term settlement of the waste material. The PRPs contractor, REMCOR, mobilized to the Site in May 1993. Two french drains were installed, one upgradient of Waste Area No. 4 and the other upgradient of Waste Area No.3, using a bio-polymer slurry technique during June 1993. Cap construction was initiated in July 1993. The cap included a 12 inch gas vent layer, geosynthetic clay liner, 40 mil VLDPE geomembrane, 12 inch sand drainage layer, 36 inches of frost and erosion protection, and 6 inches of top soil. Passive gas vents with carbon treatment canisters attached were installed. The cap on the steep slopes consisted of a 40 mil textured geomembrane over common borrow. The layers above the geomembrane on the slope were the same as the previously discussed. Construction activities were completed in November 1993. EPA and the oversight contractor performed a substantial completion inspection in December 1993. In April 1994 a retention pond overflowed due to a construction defect. This defect has been corrected by changing the design of the discharge pipe and installing a new overflow channel. In addition, areas of erosion were repaired and re-seeded in June 1994.

EPA and the oversight contractor performed a final inspection of OU2 on June 30, 1994. The cap, source control well, french drains, and surface water diversions were determined to be constructed according to design. The areas of erosion repair and the repairs to the sediment pond were not completely vegetated on June 30, 1994. As of August 11, 1994, based upon an EPA follow-up inspections, the landfill has a well established grass cover in all areas. The french drains and cap have been successful in reducing the saturation of the waste material as measured by piezometers below the waste. A Remedial Action Report for OU2 was completed in September 1994. A Preliminary Close Out Report was completed for Operable Units 1 and 2 in September 1994.

The remedial action has been completed and is considered operational and functional. This long-term remedial action will be operated and maintained for at least thirty years by the PRPs as required by the two consent decrees. The Town of Springfield will be performing the operation and maintenance actions. Institutional controls required by Operable Unit 2 have been fully implemented and the institutional controls required by Operable Unit No. 1 have been implemented. The Town of Springfield has restricted use of the property containing the cap and treatment facility. The Town of Springfield has to implement institutional controls preventing the use of the ground water in the areas of contamination outside the fence enclosing the cap.

The landfill cap, in combination with the groundwater and leachate control system, have met the combined remedial action objectives for Operable Units No. 1 and 2. The cap prevents direct contact with contaminated material, minimizes infiltration and the generation of leachate, and controls landfill gas. The extraction system contains the groundwater contamination within the waste management unit.

III. ARARS REVIEW AND UPDATE

Most of the ARARs identified by the 1989 and 1990 RODs were met as part of the construction of the remedial actions. Two ARARs control the ongoing operation of the remedial action. The Vermont groundwater enforcement standards are ARARs, along with MCLs, for the groundwater quality outside the limits of the Waste Management Unit. The VT groundwater standards were updated since the RODs. The Vermont groundwater standards were made to be equivalent to the federal MCLs. Therefore, there is no additional evaluation required as part of this review as MCLs were an original ARAR and the Site is meeting the appropriate MCL standards. The goal of the remedial action will continue to be the restoration of the groundwater to MCLs and Vermont groundwater standards.

The Vermont Air Pollution Control regulations also played a significant role in the remedial action. The pre-treatment facility is currently being operated for the purposes of preventing unacceptable air emissions. The annual monitoring report for the Site continues to evaluate compliance with the air pollution control regulations. New landfill gas control regulations were promulgated by EPA since the RODs. These regulations require an evaluation as to the need for control of landfill gas. The Site does not produce sufficient gas to trigger the applicability of these regulations.

The landfill cap and groundwater/leachate extraction and treatment system are in compliance with all ARARs.

IV. SITE VISIT SUMMARY

EPA performed a Site visit in July 1998. This Site visit was similar in nature to the other Site inspections performed annually since the completion of the remedial action. EPA walked the surface of the landfill cap and inspected the leachate collection and treatment system.

All Site remedial components were in good working conditions and no problems were observed. The annual report documents all maintenance and monitoring activities for each year. In general, the landfill appears to be in good shape. There are a few areas were localized erosion has required maintenance activities. No major areas of erosion or significant slopes failures have occurred.

V. REVIEW OF MONITORING DATA

EPA receives an annual Monitoring Report from the Town of Springfield. This Report also contains the annual inspection and maintenance data. The Town of Springfield and their contractor have been implementing the approval maintenance and monitoring plans.

Occasional problems are encountered with respect to sampling methodologies that are corrected in a timely manner.

The monitoring data supports the conclusion that the groundwater extraction system is meeting the objective of containing the contamination migrating towards Seavers Brook. Topography and stratigraphy do not allow for containment of the groundwater contamination migrating towards the Black River. The area between the Site and the Black River is a steep slope and Route 11.

VI. AREA OF NON-COMPLIANCE

No areas of non-compliance with the RODs or regulations promulgated since the RODs were identified as part of this five year review.

VII. FIVE YEAR REVIEW SUMMARY OF FINDINGS

The remedial actions required by the two RODs for the Site have been successfully implemented and are operating as planned and expected. The landfill, interceptor trenches, and extractions wells have successfully contained the contamination that was moving toward Seavers Brook. The water line and Institutional Controls have prevented any use of the groundwater. No changes to the remedial actions are necessary as a result of revised ARARs or other aspects of this review.

The groundwater beneath the landfill was not expected to meet cleanup levels and will remain an area of contamination in need of control. The existing systems are capable of providing that control.

VIII. RECOMMENDATIONS

No changes to the remedial actions selected in the 1988 and 1990 RODs is recommended as a result of this five-year review. The continued implementation of the operation, maintenance, and monitoring activities at the Site is the recommendation of this five-year review.

The next five-year review should be conducted in June 2002.

Approved by:

Patricia L. Meaney, Director — Date
Office of Site Remediation and Restoration